

Title (en)
Overpressure limiting hybrid inflator

Title (de)
Hybridgasgenerator mit Überdruckbegrenzung

Title (fr)
Dispositif de gonflage hybride avec limiteur de surpression

Publication
EP 1442978 B1 20051207 (EN)

Application
EP 04001557 A 20040126

Priority
US 35438903 A 20030130

Abstract (en)

[origin: EP1442978A1] A dual stage hybrid inflation device includes a first stage gas source (110) comprising a pressurized gas (116) stored in a first stage pressure vessel (114) and a second stage gas source (112) comprising a pyrotechnic gas generator (130) having a gas output directed into the first stage pressure vessel (114). The first stage pressure vessel (114) is in fluid communication with an inflatable device such as an aircraft emergency evacuation slide via an externally actuated valve (148) upstream of a pressure actuated valve (150) such as a rupturable diaphragm. A control circuit provides a signal to the externally actuated valve to begin a flow of gases from first stage pressure vessel (114) to a chamber on the upstream side of the burst diaphragm (160). The control circuit also sends a signal to the squib that initiates the pyrotechnic second stage gas source (130). As the pyrotechnic gas generator of the second stage gas source burns, the hot gaseous products of the second stage gas source mix with the pressurized gas (116) stored in the first stage pressure vessel (114) a predetermined time after the externally actuated valve (148) opens. At low temperatures, the pressure actuated valve (150) prevents the flow of gas from the first stage. This allows the hot combustion products from the second stage gas source to mix with the pressurized gas in the first stage pressure vessel (114), thereby heating the pressurized gas (116) until sufficient pressure is developed in the first stage pressure vessel (114) to open the pressure actuated valve (150). At high temperatures, however, pressure in the first stage pressure vessel (114) is above the threshold pressure of the pressure actuated valve (150). Accordingly, when the externally actuated valve (148) is opened, the pressure actuated valve (150) opens immediately, thereby allowing the pressure in the first stage pressure vessel (114) to drop to a safe level before the pyrotechnic gas generator (130) is initiated. <IMAGE>

IPC 1-7
B64D 25/14; B63C 9/18; B01J 7/00; B60R 21/26

IPC 8 full level
B67D 99/00 (2010.01); **B64D 25/14** (2006.01); **F42B 3/04** (2006.01)

CPC (source: EP US)
B64D 25/14 (2013.01 - EP US); **F42B 3/045** (2013.01 - EP US); **Y10T 137/1647** (2015.04 - EP US)

Cited by
EP1759993A3; EP1980456A1; US7721915B2

Designated contracting state (EPC)
DE FR

DOCDB simple family (publication)
EP 1442978 A1 20040804; **EP 1442978 B1 20051207**; DE 602004000207 D1 20060112; DE 602004000207 T2 20060622;
US 2004151600 A1 20040805; US 7032778 B2 20060425

DOCDB simple family (application)
EP 04001557 A 20040126; DE 602004000207 T 20040126; US 35438903 A 20030130